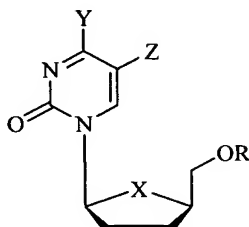


## We Claim

1. A method for the treatment of an HCV infection in a host, comprising administering an effective treatment amount of a 2',3'-dideoxynucleoside of the formula:



or a pharmaceutically acceptable salt thereof, wherein

- (i) X is O, S, S=O, SO<sub>2</sub>, NR<sup>1</sup>, N<sup>+</sup>R<sup>1</sup>R<sup>2</sup>, CH<sub>2</sub>, CHF and CR<sup>3</sup>R<sup>4</sup>;

R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, or C<sub>3-8</sub> cycloalkyl;

R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, halogen (F, Cl, Br, or I), OH or OR<sup>5</sup>;

R<sup>5</sup> is hydrogen or a hydroxyl-protecting group, such as alkyl, acyl or silyl;

- (ii) Y is NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, OH or OR<sup>8</sup>

each R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> is independently H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl;

- (iii) Z is chosen from hydrogen, halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>;

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl; and

- (iv) R is hydrogen, phosphate; stabilized phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which,

when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

$R^{10}$  is a  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, aryl, monophosphate, diphosphate, triphosphate, or  $-P(O)(OR^{11})_2$ ;

5 each  $R^{11}$  is independently hydrogen,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl or a hydroxyl-protecting group;

optionally in a pharmaceutically acceptable carrier.

2. The method of claim 1, wherein Z is not hydrogen.

3. The method of claim 1, wherein Z is a halogen (F, Cl, Br, or I).

10 4. The method of claim 3, wherein Z is F.

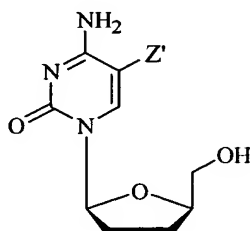
5. The method of claim 1, wherein the 2',3'-dideoxynucleoside is in the  $\beta$ -L-configuration.

6. The method of claim 5, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is enantiomerically enriched.

15 7. The method of claim 5, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is substantially free of the  $\beta$ -D-2',3'-dideoxynucleoside.

8. The method of claim 5, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is in isolated form.

20 9. A method for the treatment of an HCV infection in a host, comprising administering an effective treatment amount of a compound of the formula:



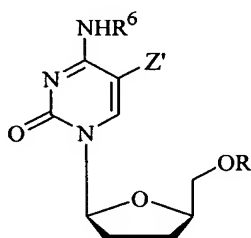
or a pharmaceutically acceptable salt thereof, wherein

Z' is chosen from halogen (F, Cl, Br, or I),  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, CN,  $CF_3$ ,  $N_3$ ,  $NO_2$ , aryl, heteroaryl and  $COR^9$ ; and

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl.

optionally in a pharmaceutically acceptable carrier.

10. A method for the treatment of an HCV infection in a host, comprising administering an effective treatment amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein

(i) R<sup>6</sup> is H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl; and

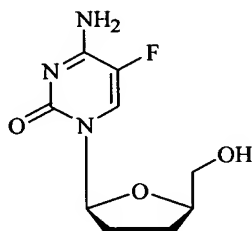
(ii) R is hydrogen, phosphate; stabilized phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

(iii) Z' is chosen from halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>; and

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl;

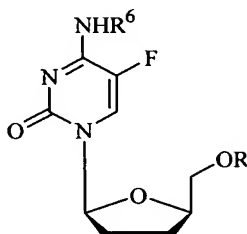
optionally in a pharmaceutically acceptable carrier.

11. A method for the treatment of an HCV infection in a host, comprising administering an effective treatment amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof, optionally in a pharmaceutically acceptable carrier.

12. A method for the treatment of an HCV infection in a host, comprising administering an effective treatment amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof,

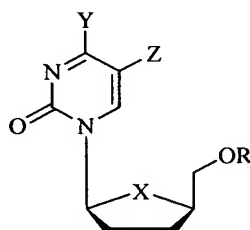
(i)  $R^6$  is H,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, or  $C_{3-8}$  cycloalkyl; and

(ii) R is hydrogen, phosphate; stabilized phosphate; acyl;  $-C(O)R^{10}$ ; alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R is H or phosphate;

optionally in a pharmaceutically acceptable carrier.

13. The method of any one of claims 10, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is enantiomerically enriched.
14. The method of any one of claims 10, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is substantially free of the  $\beta$ -D-2',3'-dideoxynucleoside.

15. The method of any one of claims 10, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is in isolated form.
16. A method for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising administering an effective treatment amount of a 2',3'-dideoxynucleoside of the formula:



or a pharmaceutically acceptable salt thereof, wherein

- (i) X is O, S, S=O, SO<sub>2</sub>, NR<sup>1</sup>, N<sup>+</sup>R<sup>1</sup>R<sup>2</sup>, CH<sub>2</sub>, CHF or CR<sup>3</sup>R<sup>4</sup>;

R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, or C<sub>3-8</sub> cycloalkyl;

R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, halogen (F, Cl, Br, or I), OH or OR<sup>5</sup>;

R<sup>5</sup> is hydrogen or a hydroxyl protecting group such as alkyl, acyl or silyl;

- (ii) Y is NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, OH or OR<sup>8</sup>

each R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> is independently H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl;

- (iii) Z is chosen from hydrogen, halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>;

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl; and

- (iv) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when

administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

$R^{10}$  is a  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, aryl, monophosphate, diphosphate, triphosphate, or  $-P(O)(OR^{11})_2$ ;

5 each  $R^{11}$  is independently hydrogen,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl or a hydroxyl-protecting group;

optionally in a pharmaceutically acceptable carrier.

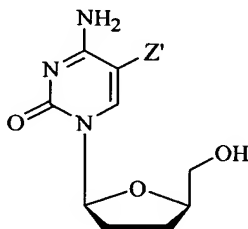
17. The method of claim 16, wherein Z is not hydrogen.

18. The method of claim 16, wherein Z is a halogen (F, Cl, Br, or I).

10 19. The method of claim 18, wherein Z is F.

20. The method of claim 16, wherein the 2',3'-dideoxynucleoside is in the  $\beta$ -L-configuration.

15 21. A method for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising administering an effective treatment amount of a compound of the formula:



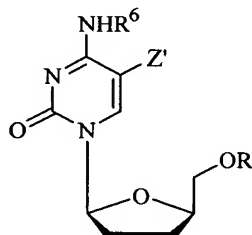
or a pharmaceutically acceptable salt thereof, wherein

$Z'$  is chosen from halogen (F, Cl, Br, or I),  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, CN,  $CF_3$ ,  $N_3$ ,  $NO_2$ , aryl, heteroaryl and  $COR^9$ ; and

20  $R^9$  is chosen from H, OH, SH,  $C_{1-6}$  alkyl,  $C_{1-6}$  aminoalkyl,  $C_{1-6}$  alkoxy and  $C_{1-6}$  thioalkyl.

optionally in a pharmaceutically acceptable carrier.

22. A method for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising administering an effective treatment amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein

(i)  $R^6$  is H,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl,  $C_{3-8}$  cycloalkyl, cyclopropyl, or  $C_{2-6}$  acyl; and

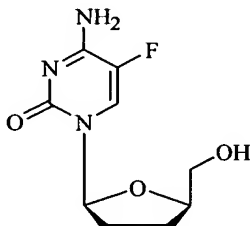
(ii) R is hydrogen, phosphate; acyl;  $-C(O)R^{10}$ , alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

(iii)  $Z'$  is chosen from halogen (F, Cl, Br, or I),  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, CN,  $CF_3$ ,  $N_3$ ,  $NO_2$ , aryl, heteroaryl and  $COR^9$ ; and

$R^9$  is chosen from H, OH, SH,  $C_{1-6}$  alkyl,  $C_{1-6}$  aminoalkyl,  $C_{1-6}$  alkoxy and  $C_{1-6}$  thioalkyl;

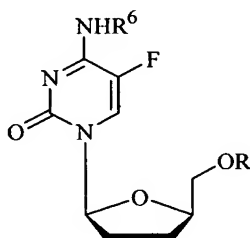
optionally in a pharmaceutically acceptable carrier.

23. A method for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising administering an effective treatment amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof, optionally in a pharmaceutically acceptable carrier.

24. A method for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising administering an effective treatment amount of a compound of the formula:



or a pharmaceutically acceptable salt thereof,

- (i) R<sup>6</sup> is H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, or C<sub>3-8</sub> cycloalkyl; and
- (ii) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

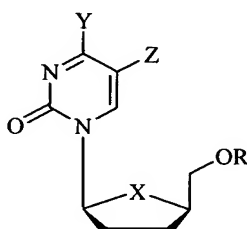
optionally in a pharmaceutically acceptable carrier.

25. The method according to claim 16, wherein the *Flaviviridae* viral infection is an HCV infection.
26. The method according to any one of claims 1 or 16, further comprising administering in combination and/or alternation one or more other antiviral agent(s).
27. The method according to claim 26, wherein the antiviral agent is selected from the group consisting of ribavirin, interferon, PEGASYS (pegylated interferon alfa-2a), INFERGEN (interferon alfacon-1), OMNIFERON (natural interferon), ALBUFERON, REBIF (interferon beta-1a), Omega Interferon, Oral Interferon Alpha, Interferon gamma-1b, Interleukin-10, IP-501, Merimebodib VX-497, AMANTADINE (Symmetrel), HEPTAZYME, IDN-6556, XTL-002,



HCV/MF59, CIVACIR, LEVOVIRIN, VIRAMIDINE, ZADAXIN (thymosin alfa-1), CEPLANE (histamine dihydrochloride), VX 950 / LY 570310, ISIS 14803, IDN-6556 and JTK 003.

28. The method according to any one of claims 1 or 16, wherein the host is a human.
29. The method according to any one of claims 1 or 16, wherein the host is also infected with HIV and/or HBV.
30. The method according to claim 29, wherein the host is a human.
31. A pharmaceutical composition for the treatment and/or prophylaxis of an HCV infection in a host, comprising an effective treatment amount of a 2',3'-dideoxynucleoside of the formula:



or a pharmaceutically acceptable salt or prodrug thereof, wherein

- (i) X is O, S, S=O, SO<sub>2</sub>, NR<sup>1</sup>, N<sup>+</sup>R<sup>1</sup>R<sup>2</sup>, CH<sub>2</sub>, CHF or CR<sup>3</sup>R<sup>4</sup>;

R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, or C<sub>3-8</sub> cycloalkyl;

R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, halogen (F, Cl, Br, or I), OH or OR<sup>5</sup>;

R<sup>5</sup> is hydrogen or a hydroxyl protecting group such as alkyl, acyl or silyl;

- (ii) Y is NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, OH or OR<sup>8</sup>

each R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> is independently H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl;

- (iii) Z is chosen from hydrogen, halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>;

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl; and

(iv) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

R<sup>10</sup> is a C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, aryl, monophosphate, diphosphate, triphosphate, or -P(O)(OR<sup>11</sup>)<sub>2</sub>;

each R<sup>11</sup> is independently hydrogen, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl or a hydroxyl-protecting group;

together with pharmaceutically acceptable carrier.

32. The pharmaceutical composition of claim 31, wherein Z is not hydrogen.

33. The pharmaceutical composition of claim 31, wherein Z is a halogen (F, Cl, Br, or I).

34. The pharmaceutical composition of claim 33, wherein Z is F.

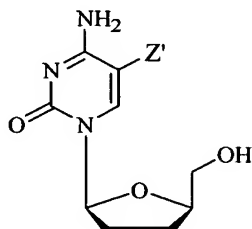
35. The pharmaceutical composition of claim 31, wherein the 2',3'-dideoxynucleoside is in the β-L-configuration.

36. The pharmaceutical composition of claim 35, wherein the β-L-2',3'-dideoxynucleoside is enantiomerically enriched.

37. The pharmaceutical composition of claim 35, wherein the β-L-2',3'-dideoxynucleoside is substantially free of the β-D-2',3'-dideoxynucleoside.

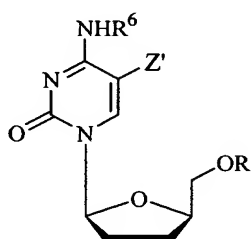
38. The pharmaceutical composition of claim 35, wherein the β-L-2',3'-dideoxynucleoside is in isolated form.

39. A pharmaceutical composition for the treatment and/or prophylaxis of an HCV infection in a host, comprising an effective amount of a compound of the formula:



- 5 or a pharmaceutically acceptable salt or prodrug thereof, wherein  
 Z' is chosen from halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>; and  
 R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl.  
 10 together with a pharmaceutically acceptable carrier.

40. A pharmaceutical composition for the treatment and/or prophylaxis of an HCV infection in a host, comprising an effective amount of a compound of the formula:



- 15 or a pharmaceutically acceptable salt or prodrug thereof, wherein  
 (i) R<sup>6</sup> is H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl; and  
 (ii) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol;  
 20 or other pharmaceutically acceptable leaving group, which, when

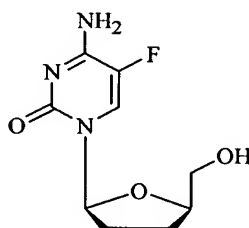
administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

(iii) Z' is chosen from halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>; and

5 R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl;

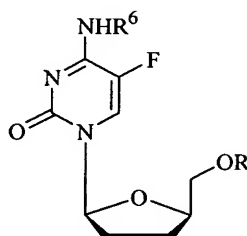
together with a pharmaceutically acceptable carrier.

10 41. A pharmaceutical composition for the treatment and/or prophylaxis of an HCV infection in a host, comprising an effective amount of a compound of the formula:



or a pharmaceutically acceptable salt or prodrug thereof, together with a pharmaceutically acceptable carrier.

15 42. A pharmaceutical composition for the treatment and/or prophylaxis of an HCV infection in a host, comprising an effective amount of a compound of the formula:



or a pharmaceutically acceptable salt or prodrug thereof,

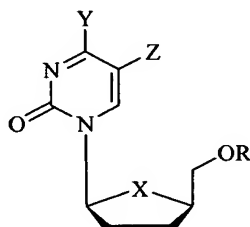
(i) R<sup>6</sup> is H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, or C<sub>3-8</sub> cycloalkyl; and

20 (ii) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol;

or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

together with a pharmaceutically acceptable carrier.

- 5      43. The pharmaceutical composition of any one of claims 40, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is enantiomerically enriched.
44. The pharmaceutical composition of any one of claims 40, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is substantially free of the  $\beta$ -D-2',3'-dideoxynucleoside.
45. The pharmaceutical composition of any one of claims 40, wherein the  $\beta$ -L-2',3'-dideoxynucleoside is in an isolated form.
- 10      46. A pharmaceutical composition for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising an effective amount of a 2',3'-dideoxynucleoside of the formula:



15      or a pharmaceutically acceptable salt or prodrug thereof, wherein

(i) X is O, S, S=O, SO<sub>2</sub>, NR<sup>1</sup>, N<sup>+</sup>R<sup>1</sup>R<sup>2</sup>, CH<sub>2</sub>, CHF or CR<sup>3</sup>R<sup>4</sup>;

R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, or C<sub>3-8</sub> cycloalkyl;

R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, halogen (F, Cl, Br, or I), OH or OR<sup>5</sup>;

R<sup>5</sup> is hydrogen or a hydroxyl protecting group such as alkyl, acyl or silyl;

(ii) Y is NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, OH or OR<sup>8</sup>

each R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> is independently H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl;

(iii) Z is chosen from hydrogen, halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>;

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl; and

5 (iv) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

10 R<sup>10</sup> is a C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, aryl, monophosphate, diphosphate, triphosphate, or -P(O)(OR<sup>11</sup>)<sub>2</sub>;

each R<sup>11</sup> is independently hydrogen, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl or a hydroxyl-protecting group;

together with a pharmaceutically acceptable carrier.

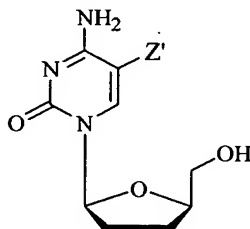
15 47. The pharmaceutical composition of claim 46, wherein Z is not hydrogen.

48. The pharmaceutical composition of claim 46, wherein Z is a halogen (F, Cl, Br, or I).

49. The pharmaceutical composition of claim 48, wherein Z is F.

20 50. The pharmaceutical composition of claim 46, wherein the 2',3'-dideoxynucleoside is in the β-L-configuration.

51. A pharmaceutical composition for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising an effective amount of a compound of the formula:



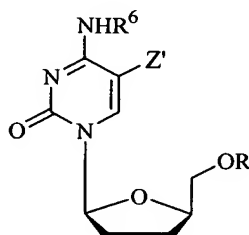
or a pharmaceutically acceptable salt or prodrug thereof, wherein

Z' is chosen from halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>; and

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl.

together with a pharmaceutically acceptable carrier.

52. A pharmaceutical composition for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising an effective amount of a compound of the formula:



or a pharmaceutically acceptable salt or prodrug thereof, wherein

(i) R<sup>6</sup> is H, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>3-8</sub> cycloalkyl, cyclopropyl, or C<sub>2-6</sub> acyl; and

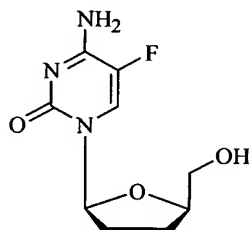
(ii) R is hydrogen, phosphate; acyl; -C(O)R<sup>10</sup>, alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

(iii) Z' is chosen from halogen (F, Cl, Br, or I), C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, CN, CF<sub>3</sub>, N<sub>3</sub>, NO<sub>2</sub>, aryl, heteroaryl and COR<sup>9</sup>; and

R<sup>9</sup> is chosen from H, OH, SH, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> aminoalkyl, C<sub>1-6</sub> alkoxy and C<sub>1-6</sub> thioalkyl;

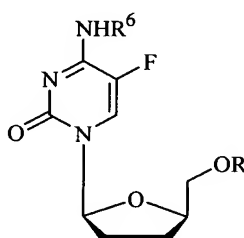
together with a pharmaceutically acceptable carrier.

53. A pharmaceutical composition for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising an effective amount of a compound of the formula:



5 or a pharmaceutically acceptable salt or prodrug thereof, together with a pharmaceutically acceptable carrier.

54. A pharmaceutical composition for reducing the biological activity of a *Flaviviridae* viral infection in a host comprising an effective amount of a compound of the formula:



10

or a pharmaceutically acceptable salt or prodrug thereof,

- (i)  $R^6$  is H,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl, or  $C_{3-8}$  cycloalkyl; and
- (ii) R is hydrogen, phosphate; acyl;  $-C(O)R^{10}$ , alkyl; sulfonate ester; sulfonyl; a lipid; an amino acid; a carbohydrate; a peptide; a cholesterol; or other pharmaceutically acceptable leaving group, which, when administered *in vivo*, is capable of providing a compound wherein R is H or phosphate;

15

together with a pharmaceutically acceptable carrier.

55. The pharmaceutical composition according to claim 52, wherein the *Flaviviridae* viral infection is an HCV infection.

20



56. The pharmaceutical composition according to any one of claims 31 or 46, further comprising one or more other antiviral agent(s).
57. The pharmaceutical composition according to claim 56, wherein the antiviral agent is selected from the group consisting of ribavirin, interferon, PEGASYS (pegylated interferon alfa-2a), INFERGEN (interferon alfacon-1), OMNIFERON (natural interferon), ALBUFERON, REBIF (interferon beta-1a), Omega Interferon, Oral Interferon Alpha, Interferon gamma-1b, Interleukin-10, IP-501, Merimebodib VX-497, AMANTADINE (Symmetrel), HEPTAZYME , IDN-6556, XTL-002, HCV/MF59, CIVACIR, LEVOVIRIN, VIRAMIDINE, ZADAXIN (thymosin alfa-1), CEPLANE (histamine dihydrochloride), VX 950 / LY 570310, ISIS 14803, IDN-6556 and JTK 003.
58. The pharmaceutical composition according to any one of claims 31 or 46, wherein the host is a human.
59. The pharmaceutical composition according to any one of claims 32 or 46, wherein the host is also infected with HIV and/or HBV.
60. The pharmaceutical composition according to claim 59, wherein the host is a human.